

AVIATION WEEK

SEPT. 1, 1947

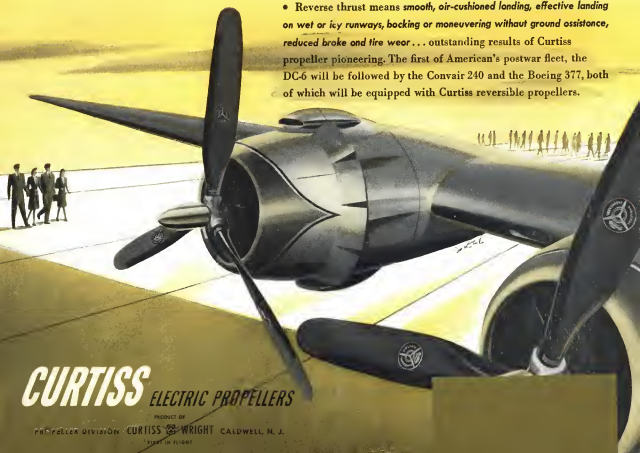
INCORPORATING AVIATION AND AVIATION NEWS

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Two great names make propeller history

- Two great names, American Airlines and Curtiss Propellers, join in introducing new comfort and safety to air travel. American's recent inauguration of DC-6 service between New York and Chicago marked the first scheduled airline use of reversible propellers.
- Reverse thrust means smooth, air-cushioned landing, effective landing on wet or icy runways, backing or maneuvering without ground assistance, reduced brake and tire wear . . . outstanding results of Curtiss propeller pioneering. The first of American's postwar fleet, the DC-6 will be followed by the Convair 240 and the Boeing 377, both of which will be equipped with Curtiss reversible propellers.



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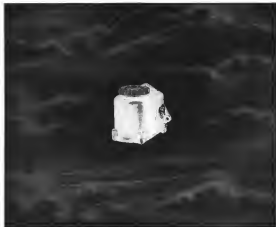
Jet propulsion, turbine design and supercharging call for a wide variety of many-bladed wheels to pack air and power into modern aircraft engines. Such wheels are manufactured to extremely close tolerances and must withstand severe heat and centrifugal stress. Building them is a new, highly specialized metallurgical and engineering science.

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AVIATION WEEK, September 1, 1947

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RECORDS AND RACING—Selden has the airplane's prime attribute, speed, monopolized the news so consistently. Breaking the world's absolute speed record twice within five days with the Douglas Skystrak, on the eve of the second jet tour around the National Air Races, overshadowed ordinary aviation activity.

Just what the next move will be in the push toward the sonic barrier is problematical. AAF had decided to rest on its F-106 laurels for a while and forget index track, further attempts to raise the speed record.

Perhaps the fact that a Navy pilot, then a Marine pilot, shattered the AAF record will persuade the Air Force to reconsider its decision.

The D-5B's flights, although bringing praise to all concerned, may defuse some of the importance previously attached to absolute speed records. The D-5B, unlike the F-106, was not constructed for record attempts. It is partly for transonic research and, to line up in the purposes of its design, could be expected to better the speed of some subsonic airplanes. That same reasoning would apply to other high-speed models in the works.

OLD REFRAIN—Getting back more to the power scheme of things, with conflicts between specially-built planes, the National Air Races at Cleveland raise the old argument as to what engineering improvements the men want. There was no field for the argument last year as practically all entries were modified military planes.

This year the men revert to historic type. They were established originally in the early '20s in the hope they would give an outlet to safety by providing a strong proving ground for engineering innovations. The degree to which they ever fulfilled that function has been argued ever since. The question is open again.

ILS FOR AIRLINE—ILS—Of more immediate importance in the field of safety is the airline rush to obtain CAA approval for the use of ILS this winter. Despite that fact CAA's Instrument Landing System was developed and installed in aerial airports before the war, and is now supposed to be ready at more than 90 fields, this winter will mark its debut as for as scheduled operations is concerned.

It will mean a test of ILS that CAA often has not and its worth. During the early days of the ILS-GCA controversy, a year ago, one of CAA's main points was that the airlines would not trust themselves of the system CAA had set up for instrument approach.

FIRST TEST—One of the dominant facts of the controversy was that neither of the systems had been tried

commercially. CAA now is in use at several fields. With all airlines expected to be equipped for ILS use before winter sets in, and with seven airlines already given the go-ahead to use it at 25 airports, ILS will get an even better work-out.

The stakes may well be as important as safety as a profitable, growing industry. Safety and reliability have about the same relationship to revenues, observers point out. Even though coordination of flights during bad weather may preserve a safety record, there is still the loss of immediate and long-term revenue with which to contend.

Some airlines complain that a reputation for aerial safety hangs on a carrier during the worst of winter will carry over and affect summer traffic.

With the financial condition of several lines still soft, the degree to which ILS is effective this winter could well be the payoff.

HOT TIME FOR SAFETY BOARD—Meanwhile, the investigation into the safety of the President's special board is necessary for a week because of the last—Washington weather, not the criticism recently leveled at the board, even by its own members, because of its lack of activity.

Charles James M. Leach was off to New York—where the weather was no cooler—to make a speech. He got a glimpse of one of the factors in safety as the pilot of the airline plane in which he was riding missed La Guardia Field in the early morning mist on his first pass and went around to come in again.

WHAT PEAK FOR PROFITS?—Interest in the records and news and the safety situation could hardly divert the aircraft manufacturing industry's attention from the Department of Commerce report which gave definite indications of a 1947 billion dollar plus increase. This holds hope for a slight overall profit.

What the manufacturers' representatives in Washington wonder is whether the industry can lose future plans on the expectation of more billion-dollar years. If it could, these observers believe most of the companies could plan operations to show a profit.

Key to the situation, of course, is military revenue. And that goes back to Congressional appropriations. More gun robs support for the manufacturers and AAF may be forthcoming from the Veterans of Foreign Wars who are studying an airplane drive.

VFW's campaign will not be allied with that of the American Legion and will not be sponsored, as is the Legion's, by Aircraft Industries Association. VFW is getting behind-the-scenes support from AAF brass.

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NEWS DIGEST

DOMESTIC

John K. Northrop has been awarded the Spirit of St. Louis gold medal, highest award of the American Society of Mechanical Engineers, for his development of a successful flying wing.

First C-54 night test of the Constellation has been made by Robert Green, pilot, James Kato and L. C. Burges, flight analysts. Two airplanes are being used to replicate tests.

Major Gen. Frederick E. Anderson, Assistant Chief of Air Staff for Personnel, has been retired after 33 years of flying service. He headed the 1st Bomber Command during the war and later served as deputy in General Spain in Europe.

Civil Air Patrol has been placed under Air Defense Command, with headquarters at Mitchell Field, New York. Maj. Gen. F. H. North, Jr. continues as Commanding General of CAP with headquarters in Washington.

President Truman named W. Stuart Symington Secretary of the Air Force, Kenneth C. Rand Secretary of the Army and John L. Sullivan Secretary of the Navy. All were deputy secretaries before appointment. They will be sworn in with Secretary of Defense Foran in mid-September and will be subject to Senate confirmation next January.

FINANCIAL

Boeing Corp. declared 20 cent dividend payable on Sept. 30 to common shareholders on record Sept. 7.

General Electric Co. reports a profit of \$37,579,136 for first six months of year, equivalent to \$1.32 a share of common stock, or net sale of \$13,791,679.

Prudential Insurance Co., Lockport, N.Y., has filed a registration statement covering a proposed issue of 150,000 shares of common stock at \$10 per share. Proceeds are to increase working capital.

FOREIGN

International Air Express shipments were up 15 percent in the first six months of 1947 over the same 1946 period. Shipments by Air Express division of Railway Express Agency to foreign countries exceeded import shipments by more than six to one.

British Minister of Supply states that aircraft exports of about \$10,000,000 are anticipated this year.

Dutch Government does not intend to permit formation of a new airline and the airport houses of the State General suggests that Dutch ownership companies participate in the expanded capabilities of KLM rather than from a competitive airline which "would weaken Netherlands aviation in the face of extremely keen foreign competition."

Here's a great opportunity to purchase top-quality Aircraft Components from your government at fraction-of-cost prices. Engines, hardware, instruments, propellers, engine parts, tires and tubes, carburetors, magnos, etc., are being offered. Thousands upon thousands of items are available. Figure out your present and future needs... and act without delay.

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Speed Mark Upped Twice

Navy Sets Speed Record Of 656 MPH. With Douglas D-558

Jet research plane smashes AAF mark twice during week in Murco; Carl and Caldwell are pilots.

Navy smashed the world speed record last week when the Navy Jet Power test week with a pair of surprising 640 mph and 656 mph performances by the Douglas-built, jet-powered D-558 research plane. Both records were set over the vast Lake Michigan (146 mi) north of Milwaukee, Wis., where Carl Albert Boyd set the former record of 637.7 in a Lockheed P-58B last June. Commander Thomas Caldwell, Jr., flew the D-558 in the first record-breaking run that was originally scheduled in a class scheduled for the final attempt. Caldwell set a maximum of 613.4 mph on one of his four laps and averaged 646.7 mph on a 77 degree temperature. Major Milton Mason Carl followed several days later with a surprising 656.6 mph to crash the AAF record by 27 mph. Carl's flight was made at a temperature of 94 degrees and reached Mach 3.1, equalling the mark recently reached by the British Gloster Meteor as it held the record at 656 mph. ■ 50,000-800 Crested—The record holding

D-558 was the second of three models built by Douglas under a \$1,000,000 Navy contract as part of the post-WWII Navy-NACA research flight research program. Two models are flying with a third being completed. It is a purely a research airplane with no maneuverability application. Navy and NACA will each get one D-558 with Douglas retaining the third plane for another performance test.

Navy has plans for keeping most of any AAF challenge with research plane that is expected to put the D-558 up to 671 mph without difficulty. Caldwell's own work made using a standard General Electric engine, Allison built 4000 hp thrust D-558 without any difficulty.

■ Pilot Power Test—Later Navy will use a T-340 as its D-558, giving it 5,000 hp, more thrust dry and 6,000 hp with water injection. Plans are also being considered to build a concept by jet into other models of the D-558 so that at high speeds when the tailjet is approaching speed, some of the

be cut out and pure rocket power applied.

The D-558's maximum and 7000 ft/min rate performance is about 60 percent slower than that of a conventional fighter. Perhaps a surprise ally with full maneuverability. Wings span are made of 7000 aluminum. Fuselage drive has been built into the Navy model to permit slowing up the last emergency landings or when severe buffeting is encountered at high speeds. The D-558 takes off at about 150 mph and lands about 175 mph.

■ New Version Planned—Basic design was done by Milton Davidson of NACA's Langley Memorial Aeronautical Laboratory. Detailed design was done by Douglas engineer R. C. Flanagan.

Carl and Caldwell test pilot who made both flights of the D-558 will be controlled by both models until they are accepted by the Navy and NACA. Under terms of the contract with Douglas, Navy pilots are permitted to fly the D-558 without official acceptance for "qualification." Caldwell and Carl's record flight officially ends under this category.

Nickelation of the D-558 up to a Mark II version are already planned. Mark II was originally scheduled to be similar to the Mark I but featuring a lower aspect ratio wing with Mark II getting down to a 1.5 wing aspect ratio of one. New plans for the Mark II have been changed and call for increased use of the Mark I design. The D-558 series will cover not unusual increase paralleled to the 35 mph being proposed for the post-WWII by the AAF.

Seven Airlines Approved To Use ILS at 21 Fields

More applications pending as carriers prepare for bad weather season; President's board makes more recommendations.

By ROBERT ROTZ

An intense push for official approval of ILS instrument approach procedures and reduced weather minimums at busy airports highlighted the week's developments in safety. Six airlines were granted Civil Aeronautics Administration approval to make ILS approach of 35 airports widely scattered throughout the country, with new applications for approval being received by CAA daily.

Boeing, which was the first airline to get CAA approval for ILS approaches, was joined last week by American Airlines, approved for 15 airports. Eastern Air Lines, Continental for eight, Chicago & Southern for one and Delta for one. In all cases CAA approval was also forthcoming for a reduction of ending minimums to 100 ft and visibility by a quarter mile for ILS approach.

Chase 51 ILS Route—CAA was given a total of 19 ILS routes for the operations and for health for an additional 47 airports.

Other safety developments included: ■ Preliminary CAA Report on crash of a Douglas Aircraft Corporation jet last June at Maryland, Md., stated that two of its four engines were defective when it hit the ground in a fatal landing at night. Pilot of No. 1 engine was killed and 15,500 ft after takeoff collision.

The emergency regulation requires weight penalties ranging from 90 to 100 per degree of temperature above standard in the CAA reference to 300 ft for the Martin 202. The DC-4 has a 90 lb per degree penalty.

President's special Air Safety Board made additional recommendations and received a report. The recommendations include: ■ Shoulder Harness should be provided for pilots on all commercial flights by July 1, 1948. ■ Federal Study should be made of air traffic signs in transport aircraft. ■ CAA investigation of design and use of emergency exit in transport aircraft. A report by Nov. 1 is required. ■ Adoption by CAA of a special regulation ordering the CAA Administrator to prohibit landing and take-off at or near any ground for fighting operations not yet authorized a program for its progress in the CAA.

The Board also presented a complete report on aircraft firm with recommendations for their prevention and elimination in the near future.

with 70 ft to the DC-6 and 14 ft for the Boeing 387. Night or blind flights are now to have the 200 recommended to reduce air weight possible to about 90 lb per degree.

■ CAA Resolved in action requiring new operating type principles and such action on transport type aircraft because of a lack of sufficient experience with the type to accept its evidence. ■ Air Transport Association strongly attacked part of the Boeing report (DACA, Nov. 1946, July 12) particularly those regarding standardization and such action on transport type aircraft because of a lack of sufficient experience with the type to accept its evidence.

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CONVAIR DARNING NEEDLE

Latest photo of Consolidated Vultee XE-46 jet bomber shows mounting difficulty. Convaire still is making Army demands on research for more than single experimental unit. Use of photo reconnaissance photo has been discussed.

New Gas Turbine Pyrometer "Ups" Accuracy and Response

Temperature-sensor is quickly made, readily installed, and gas flow obstruction.

An improved pyrometer for measuring the temperatures of high-velocity turbine gas streams has been developed by evaluating engine efficiency, and for protecting experimental and service equipment from damage by excessive heat of excess parts. One was devised by Andrew J. D'Al, physicist at the National Bureau of Standards, in cooperation with the Bureau of Ships, Navy Department.

Main problem is getting the temperature of these hot gases is to prevent the transfer of heat, by radiation, to or from the thermocouple junction. The shield formerly used for this purpose was not too bulky, but due to its rapid change in temperature, and they also offered considerable obstruction to the extent of gas.

► **Thermocouple Construction**—The new pyrometer consists essentially of an air-cooled thermocouple junction which is protected by a small, light, air-cooled shield. This shield, being a good reflector and a poor radiator for radiant heat energy, keeps the temperature of the shielded portion much the same as that of the gas.

The new device was found accurate to within 5 deg. F. in experiments utilizing a stream of gas at 3,500 deg. flowing with

a velocity of 250 ft. per sec. through a pipe with an inner diameter of 1.25 in.

In addition to high accuracy, laboratory tests indicate that the pyrometer responds



five types of thermocouple protection shield using air-cooled junctions. Other features of which are set out, were as a guide for mechanical construction. Radiation shield is provided for thermocouple junction. Coiled junctions give substantially the same results as the suggested type (4).



air-cooled diagram of thermocouple protection shield. Made by conventional methods, junction is secured in air-cooled tube 1 in. long and slightly tapered. This inner tube is placed within outer second junction, and assembly is placed in loss rapid heat with good thermal contact between shield and junction.

High Strength Ceramics Developed

All-crystalline materials very resistant to creep at elevated temperatures.

Particular crystals of sintered glass in high temperatures—such as found in industry—and suitable for use in order to manufacture and aviation applications, are to day available for design and production purposes. These are all-crystalline materials developed at National Bureau of Standards (NBS) and pottery lab, show exceptional mechanical and dielectric strength up to

about 3,600 deg. F. Compositions include alumina, boron, silicon, and various additions of other metallic oxides. No alloy is used. These materials maintain strength, which stands in line with dry oil films, producing viscous liquid. The film between crystalline phases and becomes matrix of glass, softening and deforming under stress at temperatures lower

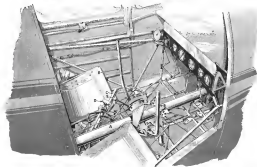
than that at which crystalline phases melt. ► **Test Results**—Under NASA spin coating, strength and creep tests in peak tension were satisfactory at temperatures ranging from 1,200 to 3,600 deg. F. The original product consisted of strong ceramic and specimens hardened from heat. On supporting members had to withstand stress and temperatures involved. Hence particular design were constructed of the most experimental material to specimen. These designs were discarded at one end to receive test specimens, and eventually at other end for receiving test loads transmitted to loading device via steel pins. Pins and test electrical leads with special wide striations which were stable in an oxidizing atmosphere.

► **Test Results**—Creep was observed with a pressure of 1 ounce, and readings could be interpreted to 0.1 micron. Tests showed that no compression under investigation were not resistant to deformation or creep up to 3,600 deg. F. for extended periods. Typical specimen showed elongation of 0.25% after 3,600 hr., with applied stress ranging from 9,000-14,000 psi. At 1,500 deg. and above, tendency to creep was more pronounced, and appreciable lower stresses produced creep rate measurable to the hour.

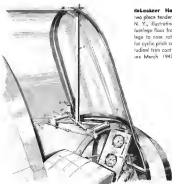


Test specimen and design for applying stress in tension test at elevated temperatures. Adapter externally clamped and extends through furnace and connects to loading device.

Sketchbook of DESIGN DETAIL



► **DeLukker Helicopter**. Cockpit interior of experimental two-place tandem rotor craft being developed at Tusculum, N. Y., illustrating drive shaft (A) running centrally down fuselage floor from engine transmission case at rear of fuselage to nose rotor gear box (B) being dual control levers for cyclic pitch control (C) collective pitch control (D) longitudinal trim control and (E) yawing-engine throttle. [Also see March 1947 Aviation]



► **Helicopter Engineering & Construction Corp. Model 100**

Cockpit interior of small single-place rotary wing craft reveals interesting control arrangement: (A) Central stick (B) engine throttle (C) instrument panel (D) throttle cable (E) collective pitch grip (F) thumb release catch for locking and unlatching collective pitch, and (G) brass bar collective pitch cable (cable not connected).



Luscombe Re-Design Cuts Costs

Major changes in wing and empennage make up to 50% materials savings, lower assembly time up to 70%, permitting price cut in face of industry-wide advances.

By ALEXANDER McSURELY

Engineers at Luscombe Aircraft Corp., Dallas, Tex., are credited in large measure by the firm for the re-engineering that has been able to reduce prices of its two-place airplanes at a time when many other manufacturers of personal aircraft have increased their prices, due to increased labor and material costs.

Luscombe is now selling an aluminum two-place 65-hp. biplane at \$2,995, within a very small margin of the lowest priced fiber-reinforced two-place plane on the market, and other aircraft manufacturers have recently dropped prices, presumably because of the Luscombe competition in the field. These facts make analysis of the achievements of the Luscombe engineers a production statement of significant interest.

Behind the production re-engineering of the Luscombe wing, empennage, and landing gear, the main basic materials which have remained static amounts that far, is a general engineering philosophy which includes the following factors primary to a program of obtaining greater production economy.

- ▶ Material cost.
- ▶ Material availability as versus time, in order outside fabricated parts.
- ▶ Factory equipment available.
- ▶ Type of personnel and skills needed.
- ▶ Tooling required.
- ▶ Number of parts to be produced.
- ▶ Inventory on hand subject to use in subsequent.
- ▶ Number of parts and pieces in design.
- ▶ Capital available to undertake costs.
- ▶ Special equipment requirements.

All these considerations have a major bearing on how components will be produced, whether they will be cast, stamped, forged, extruded, or formed from sheet stock, or

produced pre-fabricated. Indeed, problems of balancing cost against weight requirements through study of relative materials costs.

Endorsing factory equipment on a basis of original cost, even because of specialized costs, and careful scheduling to avoid overloading equipment showing high production rates in low operating cost are emphasized.

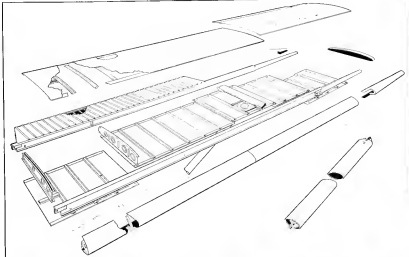
Engineer W. F. Norris, vice-president in charge of engineering, and G. W. Erickson, Structural Engineer, principal figures in the Luscombe engineering program, have sought economy in production through three main channels:

- ▶ Breaking down assemblies into sub-assemblies for greater efficiency in fabrication.
- ▶ Eliminating direct load carrying components when this can be done by increasing the gaps of material in a structure without detracting from the load capacity of the finished unit.
- ▶ Extensive use of available automatic machines, particularly automatic riveting and spot welding methods.

Other factors considered are the use of low density materials such as magnesium alloys for primary structures, attention to design details, such as streamlining of left and right-hand parts whenever possible, combining parts to reduce the total number for each subassembly to a minimum, reducing tolerances on parts where close tolerances are not essential, and overall coordination of design with production, so that tooling and production scheduling will be taken into consideration in the design.

The first product Luscombe airplane which the Dallas company produced was conceived the aluminum biplane, which carried wing 55-hp. motor 8 ft. plane which the company had built before World War II at Tinton, New Jersey.

▶ Wing. Redesigning—first and best publicized anomaly of the airplane to be redesigned was the wing. Indirect problems of balancing cost against weight requirements through study of relative materials costs.



Exploded view of new Luscombe wing shows simple direct construction of components. Detail of right and left interchangeable single strut is shown in right foreground.

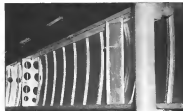
designed under the previous production program as the wing. Reaches the line after years of simplified construction as the new all metal wing design, it carried with it three years of labor shop and design work, and made possible considerable reduction in working operations at the Luscombe plant. Moreover, it gave a new advantage to the wing—that the Luscombe was the only all metal two-place airplane in production, manufacturing in a place still had fiber-reinforced wings.

The new wing, composed of one piece, was all-aluminum construction and there were no rivets, after it was produced in an 18% saving in cost from the old fiber-reinforced wing. Assembly time has been reduced a significant 10% before that required for the old wing. Lightest use of aluminum has made possible the use of automatic riveters for two-thirds of all the rivets in the wing.

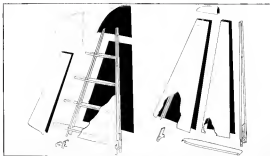
The two spars are extruded from aluminum constant M 51 alloy, chosen because of its low rivet cost. A cut which is common extruding with forming the same part from sheet stock forced extension by a considerable margin.

Wing brackets are cut from strip stock and fabricated as a single operation. The single wing rivets, drawing used for close tolerance holes at critical hole patterns required for bolts. The form and control points of the old wing were retained, to permit use of jigs and tooling already available.

Wing tip is fabricated by drawing a single sheet, and is attached to the wing by rivets to the propeller. Single wing struts replace the old conventional welded double wing struts with jigs rivets. The new struts, formed from heavy sheet, have selected 8 ft. wing control ribs and the attachment to wing and landing. These elements are



Previously assembled completed, all metal Luscombe wing has but two ribs instead of 13 used in old design. Most replaceable parts are work.



Components of old Lattacube (in left) with simplified new design (right). New design cut cost and reduced assembly time by over 50%

for right and left hand strut assemblies

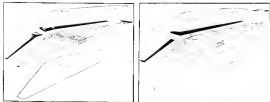
► **Changes in Fuselage Joints:** In the old Lattacube, each section of the fuselage was bolted to the next section by 24 nutbolts for the fin it replaces. Moreover, the new members in comparison of two sets, one set and three sets, as compared to two sets, four sets, five sets and one set, in the old fin. It costs approximately 50% as much to make the new as the old fin. Joints are now formed on standard inside skin. Reinforcement is provided by adding the two new skins and routing them together so that one skin holds the other in the right of the other new skin making a load carrying double thickness joint, saving 50% material saving approximately 50%.

the walls of the fin as illustrated above.

► **New Struts:** The new design struts are three sets, one set (three separate parts) as compared to the former design which had two sets, 19 ribs (five parts) and 13 skins (seven parts). New design struts are 400 parts, offering a saving of 30% in cost, and reduced assembly time 20%.

Red's struts are in use of aircraft construction with no welding, no assembly joints on right or left hand parts. Again, it is evident on the Lattacube two piece plan is a new landing gear which has not service tests indicate that the airframe improved testing and handling characteristics at reduced cost. It provides an increase in service life of welding in

fabrication of the shock absorber system and joints to eliminate considerable machining previously required due to welding distortion. And this improved design, taking a part for the main landing gear legs, also saving in cost and in the old tapered gear arrangement, while they were as simplified and stronger than the old ones used. The drag strut too, could have been eliminated, from a strength standpoint, but this would have required major redesign of landing gear. Principles of the new simplified design philosophy are being turned out in an assembly and components of the new four piece Lattacube 160 fin, model 31, which has just been announced. Details of which will be discussed in a later issue of Aviation Week.



New Lattacube (left), but 3 sets, 4 ribs, 6 skins, compared with 2 sets, 19 ribs and 13 skins of old design (right). New design brought 50% cost saving, 75% cut in assembly time

NEW AVIATION PRODUCTS

Bolter Features Flexible Structure

Compact discipointer is well receiving polished alloy is offered by Sigma Instruments, Inc., 75 Center St., Boston 21, is equipped integral device (all way) mechanical control circuit and screwdowns. Used in testing to measure high sensitivity, and speed with flexible contact structure of up to four normally open circuits for each pointer (total of eight). Price: \$100.00.



Capable of measuring with light in contact with recording relay is applied, to self-aligning in relation to the dial and other data. Also available in other sizes or in automatic control type. These units are in addition to accompanying component parts.

Superior Heater Element Is Quicker

More efficient operation and less time on repeated features of superior construction as basic material for use in aircraft engine heater. Made by DuPont Air Conditioning, Inc., 300 N. Market St., Los Angeles 21, the new Model 1211 heater runs up to 1000 degrees in 10 to 15 seconds, at 40 to 50 degrees. Heater part of 1000 sec. Power requirements are 2 amp. at 275 v. Dimensions of Model 1211 are: width 4 in., and length 1 1/2 in. Weight is 10 lb.

Information Tips

August Fuel System Directory

August Fuel System Directory. Issued by the Fuel System Manufacturers Association, 1000 N. Market St., Los Angeles 21, Calif. The directory lists the names and addresses of the manufacturers of fuel systems for aircraft. It is a valuable reference for anyone interested in the fuel system industry.

Trade-Only Feature Table

Characteristics of the new fuel system are listed in the new Fuel System Directory. The directory lists the names and addresses of the manufacturers of fuel systems for aircraft. It is a valuable reference for anyone interested in the fuel system industry.

Welding of Stainless Steel. Welding of stainless steel is a difficult task, but it can be done. The new Fuel System Directory provides information on the various methods of welding stainless steel. It is a valuable reference for anyone interested in the welding industry.

THE NEW HALFCO SPHERICAL CONTACT SELF-ALIGNING BEARING

U.S. AND FOREIGN PATENT PENDING



Here is your new self-aligning bearing. It consists of a ball bearing and a chrome plated highly polished and ball around which is a self-aligning contact. This unique design provides for perfect alignment. Full spherical outer contact. Heavy, extremely heavy bearing—perfect ball and self-aligning.

Here are a few of the smooth applications for HALFCO Bearings:

AS A ROD END BEARING



The self-aligning rod end bearing eliminates most of HALFCO bearings. They are used in rod ends and in rod end joints. They are used in rod ends and in rod end joints. They are used in rod ends and in rod end joints.

AS A ROTATION BEARING OR STATIC SELF-ALIGNING BEARING



HALFCO bearings have wide applications in static bearing, high speed, low speed, and in rotation. The self-aligning rod end bearing is used in rod ends and in rod end joints. They are used in rod ends and in rod end joints.

The extremely high compressive loading on the HALFCO bearings makes them well suited for use in rod end joints. They are used in rod ends and in rod end joints. They are used in rod ends and in rod end joints.



The emphasis of design precision, value production method to be used. HALFCO bearings are fabricated in a wide variety of materials and sizes. They are used in rod ends and in rod end joints. They are used in rod ends and in rod end joints.

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FOR "THE MODERN MAGIC CARPET"...



● An overriding advantage of Bell's new helicopter, the ability to climb or descend like an elevator, depends in part on a very favorable power-weight ratio. One way weight was reduced was through the use of a special aluminum cable developed by Aerialite for low tension circuits.

More and more leading aircraft engineers depend on Auto-Lite when they must meet unusual problems in plane designs. For complete information about the many types of Auto-Lite wire and cable available for aircraft, write to:

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Keywords: *Protein structure, Protein dynamics, Protein-ligand interaction, Protein-ligand docking, Protein-ligand binding, Protein-ligand complex, Protein-ligand binding site, Protein-ligand binding pocket, Protein-ligand binding site, Protein-ligand binding pocket, Protein-ligand binding site, Protein-ligand binding pocket*

David M. Weimer, Editor

Type in the April 11th Radio Show starting Bob Heyman
 - more Thursday night 10:00 PM -- 11:00 PM

AVIATION SALES & SERVICE

New Firestone Crosswind Landing Gear Flight Tested

CAA personnel satisfied with initial demonstration of all-purpose tricycle gear on Ercoupe.

By ALEXANDER M. SURELY

Barrels of the new Pirelli universal binding gun appear to track the gun plans as well as those with conventional pneumatic air. The advantages of cordless undergrounds which can be used for bindings on tight steps or such structures of wood shingles.

Naturally the new clothing goes in its well-known Sanyou rubber sport-bushings, now developed by Fumoto Sanyou Co., Akita, modified with a rubber torsional disc resorbable, which permits the wheel to canteer to either side. The result is that the wheel tracks ahead in the line of force, regardless of the direction the nose is pointed once the wheel touches the runway.

► **Two Springs**—Two coil springs apply elastic force to the wheel on both sides to hold it in line with the line of force. A new type of friction damping is used to control the swerving operation such as the cross motion in truck shock absorbers are used to control motion on wheel assemblies.

First experimental substitutes of the catalytic Furanose give an α -CAVynone. Fluorene has been found useful externally at the Furanose plant in Mainz and has recently been brought to Washington for further CAV experiments. The plant has been loaded apparently as recommended (refraction as high as 15 mg/l with suitable

and control characteristics reported as highly satisfactory, and perfectly safe for the average child."

► **CRA Sealed—**Julia Gauss, CRA spokeswoman, who has been supervising the contested gas project, will tell *Child*, personal living development centered in CVA. Monksford T. F. Mangle, but here is personal satisfaction with the. Fantastic gas performance and with the fact that his three-year-old, overall weight increase has been necessary to tell the ongoing industry to the gas. *Child* pointed out that the Fantastic gas shows great promise, as long as subsidiary (the travel gas places) as the other ongoing gas has been for conventional new places.

With completion of the Tincote, experimental development and with demonstration of the various types of casting gears developed under CAA contracts awarded at the national or state level in Cleveland the railroad industries soon find the casting gears are beyond the proving stage, and are ready for acceptance on production personnel records.

Sack Toy Cut

Believed to be pre-dominating if Caltrans Airports Trustee Antonio Ruiz, representative of Los Angeles County airport owners for a range of solutions typical. They will tell that the county plan a flat movement of \$10 out on average and two years. Currently such average is given flat movement at industrial land. COTA will then that increase is possibly several thousands. Including industrial property are based on the basis of a flat amount of \$10. \$90, regardless of their length. Airport owners should receive like, hundreds of millions and lost with that, like sales like, are public those others and unproductive.

plans designed for farm and business use. A leading gear which would virtually insure the long success of a safe landing on the home runway regardless of wind direction is seen as a factor which will actually increase misjudgment of the run plane. Likewise, the increased ground gear and the Goodyear winging wheel which does the same job in a different but equally effective way for conventional gear planes may well become handballing accessory items for the aircraft designer as well as outfit them no plane runs in the field.

Approximately 90,000 civil aircraft (not including scheduled airlines) were registered in CAA as of July 1. A preliminary market analysis indicates a free-wheel market here for catering gear which could be developed by use of aggressive sales policies.



Adoption of the Firestone Superflex loading gas to the conveyor pans on its cross-coned loadings has been accomplished with only 1000 lb of gas for two pans. Photos show: Right: 5' Firestone, pancake, Firestone Tire & Rubber Co. discussing the pan cycle of the new gas with John Galt, CAA consultant. Other photo shows an Orange equipped with the gas making a cross-coned loading. Nine-wheel and left main wheel have already fully rotated and right wheel will rotate in soon as plane's weight comes upon it.



Grossinger Airport Formally Opened

An archway and formal dedications are current standing about 1,000 people marked the opening of Grouse Airport, a 300-acre field near Liberty, N.Y. Equipped with a cost \$3,100 N runway and avoiding certification for a GI drug school, the air port will serve mainly as a link between the Grouse update New York's most hotel and New York City.

Current plans call for chartered service by the Comair Corp., Louisville, Mo., to transport the bodies to the airport. The bodies will be flown to the airport from their East River home to the airport.

Speakers included William C. Marcy, Assistant Secretary, New York State Department of Commerce and Milton B. Katz, president of Epsilon Chapter, Newburgh, N.Y.

Vernon Wright, former personal pilot to W. Averell Harriman, has been named as field director. Check available for field use are two Stinsons, one Beech, two Cessnas, and a Grumman and one Arrow.

Taylorcraft to Pittsburgh?

Ben Mazon, Andover, Pa., chairman of the board of directors of Tulsocraft, Inc. is interested in a plant site at Allegheny County Airport, Pittsburgh, where the newly organized business in Tylersville, western Ohio, might establish itself.

C. G. Farkis, president of the new company, which bought the name and some parts of its business production for \$65,000, built his first place in Pennsylvania. In England. In 1959 Tulas developed his Tulasco lightbulbs at Pittsburgh's Inland Empire, but was unable to find suitable manufacturing space in the Pittsburgh area and moved to Allentown, Ohio. He traded the firm at Allentown until 1985 when he lost financial control. The new company has a new operating temporarily at Allentown. A tract of 200,000-sq-ft land about the rail line County airport is a possible location for the new Tulasco facility. The new plant will require an investment of \$100 to \$200 million. New financial support of the new company is provided by Tulasco distributors and dealers.

Packaged Fishing Trip

A tugboat boat with rules agency for first type planes and repair base and larger storage will be constructed this fall at Soto Lake, south of Columbus, Ohio, by George Schmidt and L. C. Doherty. An area in their operation because established they expect to run regular flights for sportmen from Columbus to a fishing lodge that have acquired an as island to McGowan Bay, Canada. They plan to sell the Canadian trip on a "package" basis, including one-place round trip, rooms, board, guides and boats at the lodge for a fee which has not yet been fixed.

GOODYEAR TROPHY RACE ENTRIES



Baited in the Goolfyrn Trophy Race, at Cleveland, Ohio, Aug. 30 last, is displayed the Charter Race, piloted by Paul Frouse, Western Air Line pilot, by Al Chisum, designer of the radically new craft. Midget races, the Cleveland Harbinger is towed by two women and features a swimming and diving steel tube bungee. Other entries entered here will be the \$15,000 stake, at Cleveland.



KING TAKES BONANZA

Henry King, prominent Hollywood director and longtime pilot, takes delivery on a Beechcraft Bonanza at Wichita. King, who has many thousands of hours to his credit, will make his first long Bonanza trip with the Bonanza from California to Miami to select the location for a Beechcraft museum.

UPMA Answers CAA
On Maintenance Inspectors

Sharp critical to CAA's appointment of only 1,075 Aircraft Maintenance Inspectors and CAA's statement that it will be difficult to designate more than 1,500 of the total because A and E's existing CAA qualifications are not available was made by the United Plints and Mechanics Association, UPMU, over the fact that there are about 5,000 airports in the country, many of which have local substantial operations on the field, and claims that "CAA inspectors are not appearing enough maintenance designers

All that was contained in a questionnaire distributed to operators, aimed at determining what operators need designers and the names and qualifications of persons who are available for appointment for maintenance diagnosis.

Results of the poll will be tabulated and presented to CMAA with a request to take appropriate action in all cases where the needs for diagnosis appear and where qualified applicants are available.

New Aircraft Price Guide

A new Official Aircraft Price Guide containing all civilian aircraft manufactured and still in use from 1951 to the present time is announced by National Aircraft Appraisal Service, 126 Lexington Ave., New York, publication.

BRIEFING FOR DEALERS AND DISTRIBUTORS

[illegible]

SUN VALLEY FIELD BLOCKED—Riding that induces safety students could not be sent as a prepared air field near the Sun Valley, Idaho resort, Chet Moulton, Idaho director of aeromobility, has refused to approve the site, west of Ketchikan, Idaho. The Idaho director pointed out that travel to the resort by an aerial introduction must not threaten lives to maintain flying, and recovered the "canyon" and "land after" action of the terrain surrounding the field.

[illegible]

AIRBORNE FORCE TRAINING—Purdue College of Aeronautical Technology, East St. Louis, Ill., has started a voluntary ROTC ground school program for the Air Force with advanced training options in meteorology, aircraft maintenance, engineering, standard control instrument, transportation, supply, communications and administration. The Purdue school also has added a new Student Flight Services Wings to its list of places, applying a Student Release for one of the college's 1,200 full-time students online operating between E. St. Louis, Indianapolis, Milwaukee, Kansas City and Chicago.

RANDOLPH NAMED CHAIRMAN—James Randolph, private living enthusiast, Capitol Affairs executive and former Congressman from West Virginia, has been named chairman of the Washington American Planning Council which seeks to harness development of a downtown airport for private given to the District of Columbia and persuade Congress to provide matching funds for a \$135,000 which has been set aside by the Federal Airport Act for airports in the District.

[illegible]

DIAGNOSTIC FLIGHT EVALUATIONS—New basins for flight operations is scheduled for assessment of further details on specifications for service. Initial plans call for the Army Ground Force, in a decision to commandeer all the service. It is planned to maintain possession of civil flight plans now on contract duty by a maximum of four hours a month flight hours. Flights will be made at previously specified altitudes, among two place high wing conventional airplanes, and subject to availability, human pilots or AGC modifications may be used. The order indicates that flight training will be provided for selected reserve pilots in numbers not exceeding 30 percent of the 11,000 slated in regular duty. Specific interest is given to flight training in this program, presumably could be for information about the progress from the headquarters of any unit in which they find loss.

Alexander M. Mathewy

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New industrial plant space is available near fast-growing Wichita. This is your opportunity for business location in this rich, Kansas agricultural belt and oil production area.

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Some milling, meat packing, aviation, farm implement and oil equipment producers have already "discovered" Wichita. Now other manufacturers, distributors, firm operators to name just a few, can locate in ready-to-operate plant sites here.

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average in size up to almost 3,711,000 sq. ft., occupying an area of approximately 185 acres. Main manufacturing building, 1191 ft. x 1133 ft., structural steel frame, brick walls with concrete floor; administration building, 160,000 sq. ft., 1-story, steel frame, brick walls, air-conditioned; hangar building, 73,500 sq. ft.; cannalogue building, 33,000 sq. ft.; warehouse (1) 121,500 sq. ft.; permanent building, 10,000 sq. ft.; storage building, 28,000 sq. ft., and others.

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AIR TRANSPORT

Shippers' View of Air Cargo Reported by Commerce Dept.

Survey discloses airlines are handling only one-hundredth of one percent of all domestic inter-city commodity traffic.

Why air cargo tonnage has bounced sporadically in the postwar period and why shippers have failed to make even modest gains in air cargo are questions that have been discussed at length for the first time in an industry-wide survey by the transportation division of the Department of Commerce.

Despite the complete silence of an official spokesman, 19 commercial airlines, both certified and uncertified, handled about 123 million tons miles of commodity traffic in 1946. But even at that record year they carried little more than one-hundredth of one percent of the tonnage moved between U. S. cities by surface transportation.

Breakdown Given.—Commodity traffic handled by the certified domestic airlines in 1946 consisted of 33 million tons miles of mail, 24 million tons miles of express, and over 19 million tons miles of freight. Additionally, uncertified airlines flew around 47 million tons miles of freight.

The total of 123 million tons miles by air compared with more than 900 billion tons miles of domestic inter-city commodity traffic, of which over 96 percent was carried by railroads, 7 percent by motor carriers, 11 percent by pipelines and 13 percent by inland waterways. During the first half of 1947, although certified airlines expended about 46 percent compared with same period last year, but spent the tonnage moved by surface transportation the figures still are infinitesimal.

Passenger Contrast.—The surface passenger traffic showing presents a sharp contrast. This spring, the certified domestic airlines alone was operating more than half as many domestic passenger miles as was reported for February 1947. The airlines also were flying nearly one fifth as many domestic passenger miles (including commuter traffic) as were operated by all class I steam railroads.

The Commerce Department conducted interviews with 620 users of air express and scheduled, contract and noncontracted flight throughout the United States and Puerto Rico to find out where and why commodities were shipped. By as in 1946, 67 of the 620 firms surveyed, 41 percent were

engaged in manufacturing, 39 percent in retail in wholesale trade, 2 percent in agricultural industries and 14 percent in all other industries.

Problems Cited.—Industrial goods and mail tonnage largely reported as more or less in excess, machine tools, women's apparel, drugs and pharmaceuticals, jewelry, perishable fruits and vegetables, furs, and special gifts, flowers, women's handbags and accessories, furs, hats, shoes and suitcases.

Many shippers and receivers stated they used air cargo seasons only as a very low cost mode of air transportation but at the majority of cases the utilization was "one-way" or "one-way" in that once a week, in shipments averaging only 25 lb., shippers were most frequent users, in the 25-299 lb. weight group, both scheduled and unscheduled services were utilized. Scheduled airlines predominated in shipments between 500 and 1,000 lb. while unscheduled and contract carriers flew most shipments of 1,000 lb. or more.

Speed Advantage.—Most frequently mentioned advantage of air cargo service was speed. Victims shippers cited those uses for air express as including transporting repair parts to keep a production line going or to keep hardware, moving machinery, offering prompt service to customers by customers, receiving "hot" goods, sending samples for inspection to prospective customers, reaching new markets, replacing stock quickly, shipping in morning goods to start supply and pursue a particular advantage.

In terms of economy, several benefits were reported to be derived from air cargo: savings in volume of packaging costs, less need inventory and warehousing costs, and avoidance of obsolescence expense.

Several more of air cargo also mentioned the flexibility of service, improved condition of merchandise upon arrival as compared with that shipped by surface, avoidance of surface freight storage ability to serve contacts and, such as Alaska, which is otherwise inaccessible during certain months of the year, and fast piloting.

High Rates.—Many complaints were reported to air cargo rates and some also were expressed. Some users stated that that was true, if any, sometimes in shipping by air to offset the relatively high rates and others said the higher rates did not enhance the value of transportation sufficient to make it possible to make plans as of air cargo.

It was pointed out frequently that delays

in the handling of goods from one point to another, or the transfer from plane to new vehicle, and in waiting for shipping orders often offset the high speed of planes between terminals. Inadequate piloting and delivery records also were mentioned.

Competition.—Several users complained of high competition during bad weather which would increase damage to products, inefficient service in customer departments and air times, and a lack of integrated service among the certified carriers. They suggested that the airlines compete more closely with shippers in marketing out better techniques for using air cargo.

As for the claims threatening the so-called profit of every operating carrier. In a number of cases the noncontracted operators used at a considerable discount compared with the certified carrier. Not only was a plane more times scheduled for use in a place, which had large expense was incurred in replacing sections parts and equipment. **Local Problems.**—Eighteen users reported some of the most long-term problems of the noncontracted operators. Plans were reported from Alaska as a result of the original cost of the New York-Hawaii route, which was the only one that had been used for that route. The cost of the New York-Hawaii route was the only one that had been used for that route. The cost of the New York-Hawaii route was the only one that had been used for that route.

The Commerce Department stated that the comparison of air-freight rates to the certified carrier's scheduled rates showed considerable traffic consisting of shipments by large air lines to be accompanied in comparison passenger cargo. After all, freight rates were almost the regular rates, much of the traffic was lost by the noncontracted carriers. In addition, competition has given rise to some of the most serious problems of the certified carrier. One of the most serious problems of the certified carrier is the availability of many lines. Between New York and San Francisco and Los Angeles, one of the most important air cargo routes, the passenger traffic was lost to the west. Last winter one of the largest noncontracted operators flying between California and New York reported 62 percent of his traffic was scheduled against 33 percent unscheduled.

New Fueling System

An enduring fueling system which will speed the Boeing Management plan for service time by about 60 percent is being made available for the new domestic Boeing transport. Boeing Co. announced.

The system will enable the pilot to refuel to be completed, filled with 7,500 gallons of gas in less than 15 minutes.

Boeing also stated that two of the airlines that have ordered Boeing's new 441 are currently in the engineering, testing, and certification stages.



N. Y. TIMES TO WEST COAST

Four copies of the New York Times were sent to the only morning edition in Los Angeles, the Los Angeles Times, for the first time in the history of the newspaper. The Times was sent to the Los Angeles Times for the first time in the history of the newspaper. The Times was sent to the Los Angeles Times for the first time in the history of the newspaper.

IATA Technical Group Holds Meeting in France

Representatives of airlines and airports met in Paris to discuss technical matters. The meeting was held at the Hotel de Ville and was attended by representatives of the International Air Transport Association (IATA) and the International Civil Aviation Organization (ICAO).

The agenda will include a wide range of subjects, including the development of a new type of aircraft, the development of a new type of engine, and the development of a new type of landing gear. The meeting will also discuss the development of a new type of navigation system and the development of a new type of communication system.

Other topics for discussion include the development of a new type of aircraft, the development of a new type of engine, and the development of a new type of landing gear. The meeting will also discuss the development of a new type of navigation system and the development of a new type of communication system.

Recommendations made at the meeting will be largely determined by the technical policies of IATA, during the coming year.

PCA Seeks Revised Mail Pay Formula

Capital Airlines (PCA) which has been conducting an extensive campaign since last November in an effort to enable declining passenger revenues, is again looking for the outside help. The airline has asked CAA to set a new and higher frequency and rate of payment for the airlines in the country's passenger load factor.

PCA told CAA that traffic has continued to decline since 1936,608 revenue passenger miles in May to 27,153,000 in June, and 15,325,000 in July. However, the company's traffic has remained about the same during these months. Possibility of increased competition is the result of the decline in paying more than one plane in one day, one plane in one day, one plane in one day.

New Formula.—Last July, PCA along with Chicago & Southern and West Air Lines received a sharp increase in its temporary mail transportation rate. CAA reported that the rate was increased from 74 lb. of mail per plane mile in 1946, was increased to 74 lb. per plane mile in 1947, and 74 lb. per plane mile in 1948. The rate was increased from 74 lb. per plane mile in 1946, was increased to 74 lb. per plane mile in 1947, and 74 lb. per plane mile in 1948.

But the carrier has found that payment of 10 cents a mile rate for "top" planes" will be a problem. **Willing to Pay.**—PCA has suggested 41 cents a plane mile and pay more in passenger load factor a 70 percent or less. In months when the last factor remains 70 percent the rate will be 41 cents a mile. In months when the last factor remains 70 percent the rate will be 41 cents a mile.

TWA Shows Profit During Second Quarter

A return-wide reduction of overhead expenses together with increased passenger load factors enabled TWA to show a net profit of \$201,696 during the second quarter of 1947. This compares favorably with the net loss of \$245,353 in the first quarter, the comparable period last year but only a little less than the loss of \$172,423 which occurred in the first quarter.

International operations were \$246,829 in the third quarter of the year, but the profit was partially offset by the \$245,353 domestic loss. In the third quarter of 1946, domestic net profit for the third quarter ended June 30 aggregated \$175,312. Operating expenses for all routes were \$1,775,000 in the first quarter of 1947, compared with \$1,775,000 in the first quarter of 1946. The operating expenses for all routes were \$1,775,000 in the first quarter of 1947, compared with \$1,775,000 in the first quarter of 1946.



AIR FRANCE SLEEPER

Passenger on Air France's luxury scheduled between New York and Paris will find in this model Continental built beds for 22 passengers in daytime and for 44 in night. All beds are 6 ft long and as wide as three-quarter beds. Upper berth can be used as a sofa bed, the plane's design. Air France's new 441 is a new design and aircraft, which Air France has ordered to purchase.

Probe Backfires on CAB

CAB's recently initiated investigation to determine whether a Colonial Air line's traffic pattern for late transportation of one pair of its passengers is discriminatory, seems to be premature, but it could be a backfire of bad publicity.

Like the Senate's investigation of the Hughes variable contract, CAB's probe has turned the spotlight on its own activities. The question: Does the probe, which had an unprecedented holding of 12.1 cases on July 14, state that by being better informed about local economic proceedings?

► **Budget Probe.** Observers have pointed out that Congress approved a budget in CAB's first 1948 appropriation over that 1947 to enable the Board to dig out from beneath its work load. Now such conditions are coming to prevent CAB from the Colonial case has become a tricky case.

CAB's effort to initiate the investigation was pulled up by newspaper was stressed and pointed to minority by the New York Times as an example of bureaucracy gone wild. Colonial Airlines has told the Board finally that it would spend some time and money in a local economic proceeding on the do list that could possibly be resolved through additional traffic provided by late transportation of its.

► **Issuing Warnings.** "If you see of the situation that the proposed traffic provision is equally discriminatory and will result in a letter to that effect, we will not pass the matter," CAB's current has observed the Board. "The same result is right to a hearing and recommended decision by its members."

Colonial said that to carry without extra charge one pair of its (weighing 6.13 lb) per passenger in addition to the 40 lb this baggage allowance is no more discriminatory than permitting some passengers to carry overcoats as overhead when others do not. "The rule is the same as the standard discrimination involved in carrying babies in staves for as charging the same for a 20-lb passenger as a 10-lb rider."

Before the war, Colonial had a tariff in effect providing for carriage of 10 lb of child's special equipment box. The plane is equipped with special air seats.

Noise Complaints Trouble Airlines

Noise complaints about the noise of airline planes flying low over urban areas have turned into more problems in several sections of the country, and CAB and the transport industry have taken steps to prevent future occurrences.

Chambers of Flushing, Long Island, N. Y., recently expressed a committee of about 2,000 persons which has organized an active campaign against airlines. Coa member has proposed taking time sending telephone calls to CAB, the Port of New York Authority and the reform appearing on LaGuardia Field. The two press report that the noise (particularly that caused by the idling of four-engine plane) moderate with their personal lives and

► **ATA Disinformed.** The Air Transport Association views the complaints as a result of the Flushing citizens' group as the most active program yet formulated in any city and state it "is something new which the citizens should be strongly encouraged." If this group of citizens becomes strong enough ATA confirmed, it is possible that the use of LaGuardia's northwest runway for a northeast flight will be restricted. Since this is the largest runway at the field, the restriction would virtually affect airline operations.

Airline pilots bring off from LaGuardia have been advised to advise pilots both in land and open countries with safety in mind as they become airborne and to climb as rapidly as possible.

► **Letter to Residents.** Recently a citizen of Madison, N. J., wrote CAB Chairman James M. Lando asking how to come to his home and how the noise of "jet engines of four-engine" passing over his roof at 3 A.M. "During the winter, Lando advised several programs now under way aimed at curbing the noise of airline transport planes.

Lando told CAB a continuing report on all traffic noise levels recorded and reported over noise as it may be harmful. He also pointed out that the National Advisory Commission for Aeronautics is conducting tests on the technical aspects of the noise problem. These include research now being conducted at the Massachusetts Institute of Technology and at Harvard University.

CAB ACTION

The Civil Aeronautics Board

A Civil Aeronautics Board inquiry into an airline's traffic pattern for late transportation of one pair of its passengers is premature, but it could be a backfire of bad publicity. Like the Senate's investigation of the Hughes variable contract, CAB's probe has turned the spotlight on its own activities. The question: Does the probe, which had an unprecedented holding of 12.1 cases on July 14, state that by being better informed about local economic proceedings?

TWA Claims Best Loads On Trans-Atlantic Run

TWA has claimed leadership among trans-Atlantic airlines in average payload per passenger flight from Jan. 1 to Jan. 31 of this year.

With each passenger and his baggage averaged at 230 lb., TWA reported its average total payload (including passengers, mail and cargo) was 5,485 lb. The TWA study shows Pan American Airways' average payload during the period was 5,246 lb., American Overseas Airlines 4,856 lb., KLM (July 12 Jan. 29 only) 5,517 lb., Air France 6,779 lb., Scandinavian Airlines System 5,230 lb., and BOAC 5,513 lb. Among the American flag lines, TWA was third in number of flights—306 against 394 by FAA and 446 by American Overseas. Other statistics were: passengers carried—FAA 14,425, TWA 13,061, AA 7,899, and pounds carried—TWA 412,175, AA 146,568, FAA 101,445, express pounds carried—FAA 67,091, TWA 37,534, AA 148,366.

Women Say Yes To Airline Travel

Commercial airlines can consider women as potential air travel customers, according to a recent survey conducted among 2,000 women by the Ladies' Home Journal, as the release of women's flying habits. The report indicated that firms and all ways to have traveled as passengers, and 71 percent of women who have never flown at commercial lines is the first plan to fly sometime in the future. Civil air routes were used, mostly, for business, visiting and care of traveling with small children.

Most scheduled routes report airline travel objectives cut, lack of airport facilities and need for a car upon arrival.



TWIN CHRISTENING

At New, Washington, D.C., north of Christen's daughter, U.S. Coast Guard cutter "Shanghai" at LaGuardia Field with wife, Miss Chen Shi, New York City. The cutter christened the ship. The cutter was built and launched under some of the most modern shipbuilding techniques.

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The Sperry REFLECTOGAGE, operating on the principle of resonant frequencies, rapidly measures the thickness of materials.

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2. Bore eccentricity; and
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Typical materials which can be tested or measured are: steel, brass, nickel, silver, copper, aluminum, magnesium, glass, and certain plastics and rubbers.

8 SIZE only for Thickness Sheet 3100 describing the REFLECTOGAGE — a worthy companion to Sperry's Super-Sensitive Reflectometer now widely used in industry.

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Tudor IV Passes All Tropical Tests

BSAA pleased with plane's performance; expects to use four of this design.

(McGraw-Hill World News)

LONDON—Following its normal flight tests at Boscombe Down, which were successfully completed more than a fortnight ago, the Tudor IV has undergone an extensive tropical stress flight test tropical conditions in the West Indies in which it has demonstrated that it can safely fly the requirements for obtaining its certificate of airworthiness.

The tests, conducted by British South American Airways, which will be the first operator to use the Tudor IV, covered nearly 12,000 miles, and 614 hours of flying time. Air Vice Marshal D. G. T. Bennett, BSAA's managing director, was chief pilot and the crew consisted of a crew of 12.

The route flown covered both the North and South Atlantic, via Plymouth, Gander, St. John's, Port of Spain (Trinidad), Kingston (Jamaica), and home again via Nassau, Bermuda, and the Azores, to London Airport. On the second flight the North Atlantic was crossed in 11 1/2 hrs, and the fourth round trip from Gander to Bermuda was completed in 6 1/2 hrs. From Bermuda to Port of Spain, the longest flight made in the West Indies under tropical conditions, flying time was 7 1/2 hrs for the 1400 mile flight.

From Trinidad the Tudor was flown to Kingston for local test flights. These included take-offs at maximum load, 16,000 lb., as well as a three-engine take-off. The stress the maximum all-up weight, water tanks were lowered in the freight.

The Tudor IV, which is a modified version of the Tudor II, with a fuselage 8 ft longer and capable of carrying 32 passengers (the four Rolls Royce Merlin engines and its cabin is powered). Successful tests of the cabin-pressure system at 10,000 ft. altitude, carrying 30 to 20,000 ft., and the power flow at the higher altitudes for air and heat.

BSAA report that they are extremely well pleased with the plane's performance, and expect to put four of the design into service as soon as the Indian, A/V, can complete them. The first plane has been ordered to the factory for fitting-out, and the first delivery is expected to be made by the end of August, with all four in regular service by the early fall.

Initially, the Tudor IV's will go into operation on BSAA's route from London direct



AVRO TUDOR IV

En route for the British South American Airways Corporation, this version of the four Tudor II engine multimotors 32 passengers and large quantities of mail and freight. The Tudor IV has a total length of 115' 6", which is six feet more longer than its prototype Tudor I. Extensive tests just completed, including flights at the maximum all-up weight of 16,000 lb.

the east coast of South America to Buenos Aires, Latin, where the Tudor V comes into use. A BSAA version of the larger four-engine shorter range Tudor II, in comparison, the latest modifications, which should be by the last of January, 1946, these larger powered four-engine Tudor V's will be used for the east coast route and the Tudor IV's will shift to connect to the west coast of South America, via Panama to Lima (Peru) and Santiago (Chile).

Cuban Group Formed

Airline opening up and through Cuba here said in Havana to complete formation of Radio Aeromarcas de Cuba, S. A. (RACSA)—a non-profit, cooperative enterprise modeled after Aeromarcas Radia, Inc. (ARINC), which serves U. S. domestic airlines.

Extension Urged

A CNE extension has recommended extension of Lines Aeropostal Venezolana's foreign air routes passed to its schedule when July 25. The permit, originally issued in September, 1945, authorizes LAV to operate between Maracaibo, Venezuela, and Miami via Havana, and between Maracaibo and Montreal via Havana and New York.

AirIndia Dividend Reflects Travel Demand

BOMBAY—Reflecting the tremendous demand for air travel in India, the first annual report of Air-India Ltd.—formerly Tata Air Limited—issued by declaration of a 5 percent dividend on per value of shares after making all provisions for payments and making a reserve fund.

On July 25, 1946, Tata Air Lines became a public limited company owned by a branch of Tata Sons Ltd., which continues as managing agent for the "new" firm.

Gross income in the six months period was roughly \$1,500,000. Of this figure 34.7 percent was absorbed in salaries and bonuses. Other expenses totaled 48.5 percent. Of the balance, approximately \$100,000 has been set aside for depreciation and \$100,000 used to set up a reserve fund.

Full up capital of the company is approximately \$4,500,000. Capitalist subscriptions total \$1,700,000 and are followed by floating notes worth about \$2,800,000 which include about \$2,400,000 in cash and bank balances.

Shares of the newly-formed Indian airline, with par value of \$10, are quoted in the market at 160.

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EDITORIAL

AAF'S LATEST GRADUATING CLASS

"The low point in the history of the once mighty U. S. Air Force."

That is how Maj. Gen. James P. Hodges described his thirteenth graduating class, 47th, at Williams Field, Ala., the Army's only single-engine training field. The General is shown with his class.

General Hodges warned that the United States will not have an Air Force five years from now unless more pilots are trained.

One of the three graduates spent two years completing his flying training, as one after another of his classmates failed during the collapse of the Army's flying training program.

We refer this photo to President Truman's new Air Policy Commission.



SKYWAY NO. 1—REAL VISION

Washington's Board of Trade and Los Angeles Chamber of Commerce are setting out to prove that there is a future to cross-country private flying at the personal plane owner's given bid a chance.

These two associations have launched a campaign to amass a transcontinental array from Washington, D. C., to Los Angeles. They are exploiting the aid of hundreds of communities along the route. Each would amass its own, using standard and approved equipment.

Blacks Noyes of CAA and others have done a valiant educational job impressing the public with the need for amending the United States. Everyone is awake to agree that it is essential and inevitable. No one protests to be an enemy of personal flying. But no one has replied the misrepresenting for starting a national movement.

Perhaps those two sponsoring associations, with their chamber of commerce affiliations, hold the key to action.

Skyway No. 1, for our money, is a brilliant idea, even though highly experimental and merely a beginning of an adequate aerial network. It has the dramatic appeal to civic pride. It harks back to the good old American tradition of infusing municipal improvements without seeing how much goes. Uncle Sam can do it out.

It may spur development of new private fields, and improve the facilities of those already in business. It may inspire the several thousand fixed base operations along the route who will gain so much if they will adopt the successful business methods of filling stations operations. Perhaps we can hope for modest but clean, frugal owners and other operations, better transportation to towns and accommodations for overnight so tourists.

Such revolutions do not come overnight, but with continued and interested effort on a national scale.

We like the spasm, can foresee an aerial tourist eye soon overtake. It should be clearly evident, as Alton McSorley has written in *American Wings*, that "highways which had themselves included in the Skyway route or in other routes which may follow in the future, will have a considerable advantage in the amount of through plane traffic which the route is expected to generate."

The Airway, with its 46-mile width, offers a realistic choice of accommodations and service, as well as alternate weather points. Its two eastern segments, splitting at Abilene, Tex., permits a solution of routes.

We have always believed that the American people were far ahead of their Government in their eagerness to develop aviation. This is one private flying project which does not depend on months of Government surveying and bureaucratic red tape. Those should be left the purview of incessant wrangling and bickering between well meaning but jealous groups. Either the community joins in the project or it permits its neighbor a few miles away to trap the publicity.

We believe that if the Los Angeles Chamber of Commerce and the Washington Board of Trade can deliver their story to every community along this coast to coast route, few towns will be found lacking the civic spirit and vision necessary to set up this pioneer aerial highway. Give the private flyer the proper recognition, aids, facilities and accommodations and the pure stream of aerial tourists will grow at least as fast as our engines.

Skyway No. 1 can easily become the most audacious private flying project in the country. It holds great promise. We hope the cities and communities along the way do not let it down.

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In the Beechcraft Bonanza—



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Operated by men of vision and experience, West Coast Airlines is destined to play an important role in the development of regional air transport, a service which is rapidly becoming an economic necessity to thousands of smaller communities throughout the nation.



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